

ABSTRACT OF THE DISCLOSURE

A method of joining two silicon members and the bonded assembly in which the members are assembled to place them into alignment across a seam. Silicon derived from silicon powder is plasma sprayed across the seam and forms a silicon coating that bonds to the silicon members on each side of the seam to thereby bond together the members. The plasma sprayed silicon may seal an underlying bond of spin-on glass or may act as the primary bond, in which case through mortise holes are preferred so that two layers of silicon are plasma sprayed on opposing ends of the mortise holes. A silicon wafer tower or boat may be the final product. The method may be used to form a ring or a tube from segments or staves arranged in a circle.

Plasma spraying silicon may repair a crack or chip formed in a silicon member.